

ABSTRACT

A system and method for automatically determining a seed vigor index for a lot of seeds by analysis of a scanned image of a plurality of seedlings grown from lot of seeds, including automatically separating and analyzing overlapped seedlings. According to one 5 aspect of the current invention, seedling analysis software is used to analyze an image of seedlings. The seedling analysis software preferably analyzes both hypocotyl and radicle lengths and thus determines the separation point between the two for each seedling. The seedling analysis software also preferably separates overlapped seedlings, preferably using a simulated annealing technique. According to another aspect of the present invention, a low-10 cost scanner placed in an inverted configuration in a scanner enclosure is used to generate high-quality, reproducible images of seedlings. According to yet another aspect of the present invention, a method of using ordinary germination boxes, i.e., "sandwich boxes" is used to germinate seedlings that greatly facilitate computer-based analysis. In general, this method comprises placing germination blotter paper in the lid of a sandwich box and growing 15 seedlings within the sandwich box in a nearly vertical (upright) position in a darkened germination chamber. The resulting seedlings produce hypocotyls that grow essentially upward and radicles that grow essentially downward, which greatly facilitates image acquisition of the entire seedling, e.g., with an inverted scanner.

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